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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,182	03/10/2004	Fermin Viteri	3004.001	5289

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EXAMINER

RODRIGUEZ, WILLIAM H

ART UNIT

PAPER NUMBER

3746

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,182

Applicant(s)

VITERI, FERMIN

Examiner

William H. Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 28-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 12-21, 28, 29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 5-11, 22-25 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>attachment A</u> . |

DETAILED ACTION

This office action is in response to the amendment and remarks filed 5/26/05. Since the examiner has applied new grounds of rejection, this office action is being made non-final to afford the applicant the opportunity to respond to the new grounds of rejection.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 3 recites the limitation "said first expander" in line 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

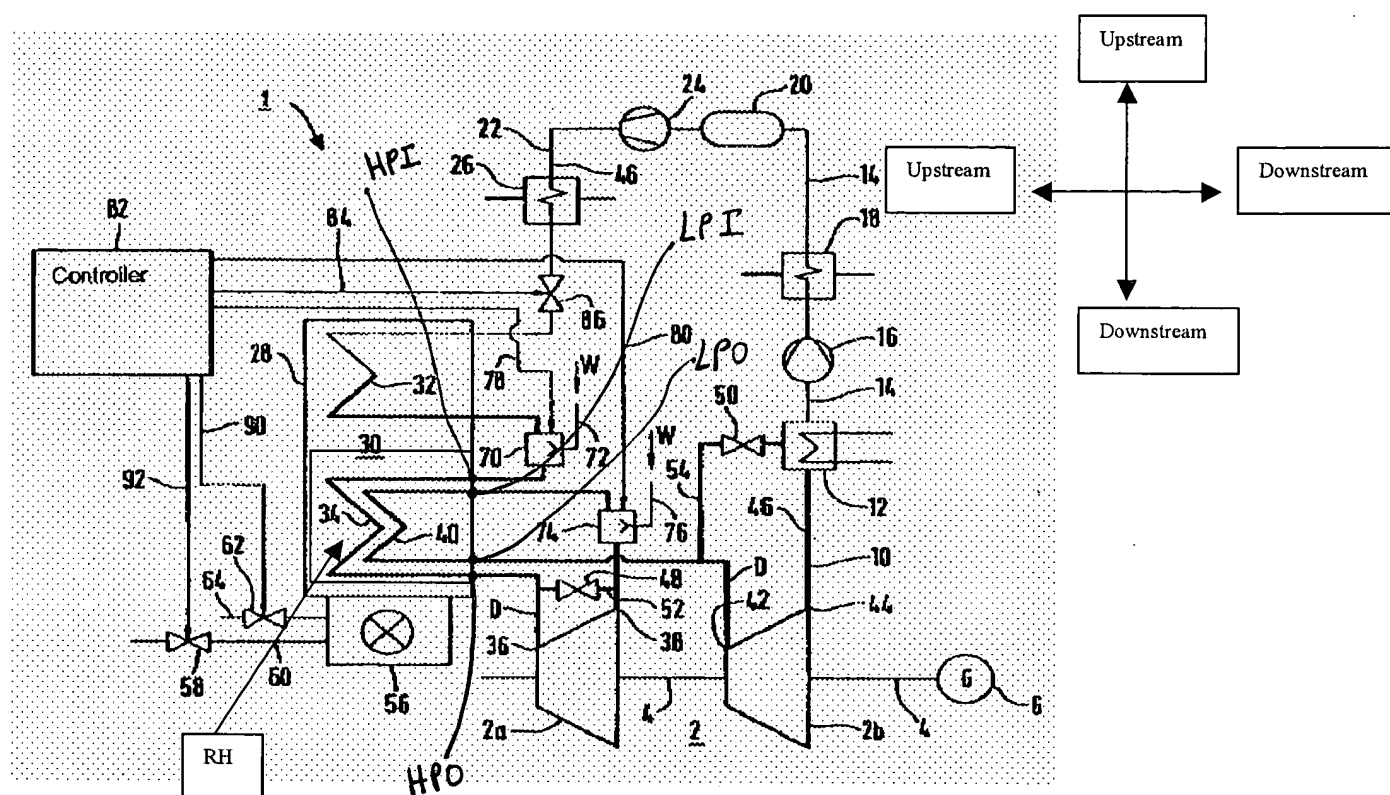
Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kallina et al. (US 6,301,895).



With respect to claim 1, **Kallina** teaches a power generation system comprising: a high temperature high pressure source 32 of working fluid; a reheat heat exchanger RH having a high pressure inlet HPI downstream from said high temperature high pressure source of working fluid, a high pressure outlet HPO, a low pressure inlet LPI, a low pressure outlet LPO, a high pressure path 34 between said high pressure inlet and said high pressure outlet and a low pressure path 40 between said low pressure inlet and said low pressure outlet, said high pressure path located in heat transfer relationship with said low pressure path; an expander 2a having an inlet downstream from said high pressure outlet and a discharge 38, said expander 2a adapted to expand the working fluid therein from a higher pressure to a lower pressure; and said discharge 38 of said expander upstream from said low pressure inlet of said reheat heat exchanger. See **Figure 1** of Kallina above.

With respect to claim 2, **Kallina** teaches that a temperature of the working fluid at said high pressure inlet HPI of said reheat heat exchanger is greater than a maximum inlet temperature for said expander. The HPO is connected to the inlet 36 of expander 2a. The temperature at the HPO is lower than the temperature at the HPI since heat exchange has occurred between paths 34 and 40. Thus the temperature at the inlet to expander 2a should be lower than the HPI temperature. See **Figure 1** of Kallina above.

With respect to claim 3, **Kallina** teaches that a temperature of the working fluid at said high pressure outlet HPO of said reheat heat exchanger is less than or equal to a maximum inlet temperature for said first expander (inherent otherwise if the temperature excess a maximum inlet temperature of the expander, the expander may be damaged by the excessive heat). See **Figure 1** of Kallina above.

With respect to claim 4, **Kallina** teaches that a second expander 2b is located downstream from said low pressure outlet of said reheat heat exchanger. See **Figure 1** of Kallina above.

With respect to claim 19, **Kallina** teaches a power generation system having a high temperature high pressure source 32 of a working fluid, a first working fluid expander 2a, a second working fluid expander 2b downstream from the first working fluid expander, a reheat heat exchanger RH having a high pressure inlet HPI, a high pressure outlet HPO, a low pressure inlet LPI, a low pressure outlet LPO, a high pressure path 34 between the high pressure inlet and the high pressure outlet, and a low pressure path 40 between the low pressure inlet and the low pressure outlet, the high pressure path located in heat transfer relationship with the low pressure path; and the high pressure inlet of the reheat exchanger RH located downstream from the source

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of high temperature high pressure working fluid 32, the high pressure outlet located upstream from the first working fluid expander 2a, said low pressure inlet located downstream from a discharge 38 of the first working fluid expander, and the low pressure outlet located upstream from the second working fluid expander 2b. See **Figure 1** of Kallina above.

Since Kallina has the same structure as claimed, it is inherent that Kallina's device would be able to perform the recited method steps in claims 19-21.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12-18, 28, 29 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kallina et al. (US 6,301,895)** in view of **Dorf et al. "The Engineering Handbook-1996"**.

With respect to claim 12, **Kallina** discussed above is silent about the details of the internal structure or the type of reheat exchanger being used. However, **The Engineering Handbook (TEHB)** teaches a very efficient and commonly used reheat heat exchanger for power generation, said reheat exchanger comprising: a casing; a pair of tube sheets interfacing with said casing; a plurality of tubes extending between said tube sheets, a 1st inlet located adjacent at least one of said tube sheets; a 1st outlet located adjacent at least one of said tube sheets and opposite said 1st inlet, a 1st path extending between said 1st inlet and said 1st outlet,

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said 1st path defined at least partially by interiors of said tubes; a 2nd inlet passing through said casing; a 2nd outlet passing through said casing; and a 2nd path extending between said 2nd inlet and said 2nd outlet and in contact with an exterior surface of said tubes, a plurality of baffles located within said casing and between said low pressure inlet and said low pressure outlet, said baffles configured to lengthen said low pressure path between said low pressure inlet and said low pressure outlet. Further, the **TEHB** teaches that this type of reheat heat exchanger (commonly used in power plants) can be custom designed for almost any capacity, working fluid type, operating pressure, and temperature conditions. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used **TEHB**'s reheat exchanger as Kallina's reheat exchanger since this type of heat exchanger was readily available and commonly used taught by **TEHB** due to its efficient heat transfer. See **Figure 50.2** and pages 531-533 of **TEHB** (attached to office action) and **Figure 1** of Kallina.

Note: The "Shell-and Tube Heat Exchanger" claimed by applicant to be the invention is well known and commonly used in the art. For instance, see Figure 50.2 of The Engineering Handbook (previously attached to office action) or U.S. references 6,808,017 and 4,118,944 just to name a few.

With respect to claim 13-18, the **TEHB** teaches that this type of reheat heat exchanger can be custom designed for almost any capacity, working fluid type, operating pressure, and temperature conditions. Thus, the reheat exchanger taught by **TEHB** would have been able to operate within the temperature and pressure ranges claimed by the invention.

With respect to claim 28, **Kallina** teaches a power generation system comprising: a high temperature high pressure source 32 of working fluid; a reheat heat exchanger RH having a high pressure inlet HPI downstream from said high temperature high pressure source of working fluid, a high pressure outlet HPO, a low pressure inlet LPI, a low pressure outlet LPO, a high pressure path 34 between said high pressure inlet and said high pressure outlet and a low pressure path 40 between said low pressure inlet and said low pressure outlet, said high pressure path located in heat transfer relationship with said low pressure path; an expander 2a having an inlet downstream from said high pressure outlet and a discharge 38, said expander 2a adapted to expand the working fluid therein from a higher pressure to a lower pressure; and said discharge 38 of said expander upstream from said low pressure inlet of said reheat heat exchanger. **Kallina** is silent about the details of the internal structure or the type of reheat exchanger being used. However, **The Engineering Handbook (TEHB)** teaches a very efficient and commonly used reheat heat exchanger for power generation, said reheat exchanger comprising: a casing; a pair of tube sheets interfacing with said casing; a plurality of tubes extending between said tube sheets, a 1st inlet located adjacent at least one of said tube sheets; a 1st outlet located adjacent at least one of said tube sheets and opposite said 1st inlet, a 1st path extending between said 1st inlet and said 1st outlet, said 1st path defined at least partially by interiors of said tubes; a 2nd inlet passing through said casing; a 2nd outlet passing through said casing; and a 2nd path extending between said 2nd inlet and said 2nd outlet and in contact with an exterior surface of said tubes. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used TEHB's reheat exchanger as Kallina's reheat exchanger since this type of heat exchanger was readily available and commonly used taught by TEHB due to its efficient heat

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transfer. See **Figure 50.2** and pages 531-533 of TEHB (attached to office action) and **Figure 1** of Kallina.

With respect to claim 29, **Kallina** teaches that a second expander 2b is located downstream from said low pressure outlet of said reheat heat exchanger. See **Figure 1** of Kallina above.

With respect to claim 31 and 32, the temperatures claimed are typical in this type of application (power plants). Further, **TEHB** teaches that this type of reheat heat exchanger can be custom designed for almost any capacity, working fluid type, operating pressure, and temperature conditions. See **Figure 50.2** and pages 531-533 of TEHB (attached to office action).

With respect to claim 33, **The Engineering Handbook (TEHB)** teaches that the reheat heat exchanger further comprises a plurality of baffles located within said casing and between said low pressure inlet and said low pressure outlet, said baffles configured to lengthen said low pressure path between said low pressure inlet and said low pressure outlet. See **Figure 50.2** and pages 531-533 of TEHB' (attached to office action).

Allowable Subject Matter

8. The indicated allowability of claims 1-25 and 28-30 is withdrawn in view of the newly discovered reference(s) to **Kallina**. See rejection above.
9. Claims 5-11, 22-25 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


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Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Rodriguez whose telephone number is 571-272-4831. The examiner can normally be reached on Monday-Friday 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on 571-272-4444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William H. Rodriguez 7/20/05
Examiner
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